

REMARKS/COMMENTS

Claims 1-9 and 16-25 are active in the case. Claim 25 is withdrawn from consideration. Reconsideration is respectfully requested.

The present invention relates to a method of improving the fracture-mechanical properties of highly scratch resistant, radiation curable coating systems.

Claim Amendment

Claim 1 has been amended to recite that the coating layer (F) is a clear coat. Support for this term can be found, for instance, at page 13, lines 4-11 of the specification. Thus, the entry of the amending limitation does not introduce new matter into the claims. Further, it is not believed that the term raises a new issue, because it is the nature of the applied and cured layer (F) to be clear.

Claim Rejection, 35 USC 103

Claims 1-9 and 16-24 stand rejected based on 35 USC 103 as obvious over Mack et al, U.S. Patent 6,500,883 in view of Otaki et al, U.S. Patent 6,482,489 and Downey, U.S. Patent 3,880,953 or Korpman 4,136,071. This ground of rejection is respectfully traversed.

In considering the above-noted four patent documents, applicants submit that the patents are not properly combinable, because of the diverse fields of technology disclosed therein. In the first place, none of the patents are concerned with the field of technology of the present invention which is the application of a clear topcoating system to a substrate such as an engineering plastic, thereby finding utility in exterior coatings that are subject to daylight, and are applied to the likes of buildings, traffic markers and the surfaces of vehicles and aircraft. The coating system of the invention is therefore subjected to significant forces of stress. Secondly, the Mack et al reference simply discloses the coating of powder particles or

fibers of a filler material with an organosilane or organosilane containing agent, which filler is simply to be incorporated in a polyamide which is suitable for injection molding into the shapes of various objects such as housings for electrical devices and parts for automobiles such as wheel caps and fan housings and the like where structural and impact resistance are necessary, whereas the objective of Otaki et al is to adhere a finely thin, photographic hologram layer by an adhesive layer to a substrate and then, on the remaining surface of the hologram to use another adhesive to adhere said surface to a topcoating, transparent protective layer. A requirement is that the adhesive forces of the two adhesive layers must be different. The Korpman and Downey references simply disclose pressure sensitive adhesive formulations for general purpose use. It is therefore believed that on the essential prong of suggestion or motivation in formulating a prior art rejection based on 35 USC 103, the prior art provides the skilled artisan with absolutely no motivation to direct his efforts to the specific objective of the present topcoating system which is placed in contact with an elastic intercoat material for application to a substrate surface.

Applicants submit, in particular, that any attempt to combine Mack et al with Otaki et al is severely strained, and clearly requires the hindsight teaching of the present claims, because the field of forming molded objects by injection molding from an engineering plastic as taught by Mack et al is in no way connected or related to the technology of Otaki et al of adhesively attaching a hologram layer to a substrate by an intervening adhesive layer and then attaching a protective layer to the other surface of the hologram layer by another adhesive. The patent at column 50, lines 39 et seq teaches that the hologram sticker acts as a type of seal which is broken once an attempt is made to remove it. In this case (col 6, line 56) separation of the hologram layer causes the breakage of layer 402 (Figs 21 and 22). This means that the laminated structure is intentionally designed that layer 402 be broken upon the removal of the top layer. On the other hand, an object of the present invention is to prevent

cracks from propagating through the multilayer coating. Clearly, a meaningful combination of Mack et al and Otaki et al can not be made and withdrawal of the rejection is respectfully requested.

Claims 1-9 and 16-24 stand rejected based on 35 USC 103 as obvious over Onozawa et al, U.S. Patent 6,103,370 in view of Matsuoka, JP 0518671 in view of Downey, U.S. Patent 3,880,953 or Korpman 4,136,071. This ground of rejection is respectfully traversed.

As stated previously, Onozawa et al discloses what is termed a hard coat sheet. What the reference discloses is the application of radiation curable coatings to base sheets which may be adhered to a window panel. An adhesive material is provided on the back of the base sheet in order to adhesively apply the hard coat sheet to a surface of a window. The sheet is very simply formed by coating a layer of a resin based composition on a base sheet. Such sheets are described in column 2, lines 8-12, where such resin films as of polyethylene, a terephthalate, a polycarbonate, polypropylene, polyvinyl chloride or the like are described. The resin based composition that is coated on a surface of the base sheet is specifically a radiation curing silicone resin incorporated in an amount ranging from 0.1 to 100 parts by wt into 100 parts by wt of a multi-functional acrylate.

The Examiner states that Onozawa teaches the attachment of the window pane to another layer. This does not appear to be so. Moreover, because a window is clear and transparent, the window pane is usually secured in a frame and not adhered or bonded to another substrate as said by the Examiner in order to take advantage of the "see-through" property of a window. Moreover, the single coating of a radiation curable silicone resin mixed with a multi-functional acrylate does not suggest the topcoat/elastic intercoat combination of the present claims. Onozawa is therefore believed to be irrelevant to the present invention as claimed.

The Matsuoka et al '671 reference does not bring the prior art closer to the present invention, because it only discloses a transparent polycarbonate shield that has a coating of a thermoplastic resin material that imparts anti-fogging properties to the shield and improves impact strength. Other than this disclosure, the reference, at least in the form of record, the reference is silent. There is certainly no teaching or suggestion of the topcoating/elastic intercoat combination of the present claims that is [laced on a substrate. Moreover, the combined Onozawa and Matsuoka et al references at best may suggest the replacement with the silicone resin/acrylate layer of Onazawa for the anti-fogging thermoplastic resin layer of Matsuoka et al, and vice versa. Neither combination suggests the claimed multicoat system of the present invention.

The Examiner applies the disclosures of the Downey and Korpman patents to Onozawa and Matsuoka et al, when, applicants submit, that there is no compelling reason to do so. All that the Matsuoka et al reference discloses is a polycarbonate shield to which is applied a thermoplastic anti-fogging layer. No adhesive layer is taught anywhere in the document for application to the polycarbonate shield. Why then the combination of either Downey or Korpman with Matsuoka et al? When the Onazawa is considered, at least there is the teaching of the application of an adhesive to the back of a base material having the coat layer thereon so that the product can be adhesively applied to a window pane. Perhaps the pressure sensitive adhesives of the references could be substituted for the adhesive layer used in Onozawa. However, the adhesive would have to be transparent, and there is no evidence in either Downey or Korpman that such is the case. Even if it is, the only thing gained by the combination of Downey or Korpman with Onozawa is a change of adhesive. Such a change does not bring the prior art combination any closer to the present invention.

It also is pointed out that Downey discloses adhesives that consist of block-copolymers having a glass transition temperature T_g of -20° C or less, whereas the adhesives

of Downey or Korpman exhibit a T_g which is significantly different from the T_g 's of the adhesives of the Downey and Korpman references. Accordingly, the outstanding ground of rejection is believed obviated and withdrawal of the rejection is respectfully requested.

Claims 1-7, 9, 17-19 and 21-24 stand rejected based on 35 USC 103(a) as obvious over Bergh et al, U.S. Patent Publication, 2003/0104245 in view of Van Havenbergh et al, U.S. Patent 5,334,842. This ground of rejection is respectfully traversed.

As stated previously on the record, the Bergh et al '245 publication is not germane to the present invention, because it discloses a radiation image storage panel that does not have the layered construction of the presently claimed multicoat system. The panel basically comprises a self-supporting or supported phosphor layer in which phosphor particles are dispersed in a polymeric binder, and, adjacent thereto, is a protective layer which contains a white pigment, normally titanium dioxide, having a refractive index greater than 1.6. The white pigment particles in the protective coating serve to improve the sharpness of the images obtained. Suitable binder materials for the phosphor layer include the polymeric materials disclosed in paragraph [0042]. It is therefore apparent that the protective top coat of the reference as an opaque material is importantly different from the topcoat system of the present claims which is clear. Accordingly, it is apparent that the reference does not disclose or suggest the multicoat system of the present invention.

The deficiencies of Bergh et al are neither overcome nor improved upon by the disclosure of Van Havenbergh et al, because even if one of the various polymer materials disclosed in column 17 were to be used as a material for the substrate of the present claims, the substrate is not the focal point of the novelty of the present invention. Accordingly, the reference does not overcome the fact that the Bergh et al patent fails to teach or suggest the topcoat system of the present claims. Withdrawal of the prior art rejection is respectfully requested.

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Applicants remain of the opinion that the application is in condition for allowance.

Early notice to this effect is earnestly solicited.

Respectfully submitted,

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